

Remarks

Support for the above-requested amendments to claims 1 and 11 is found at least in paragraphs [0014], [0015], and [0017]. Claims 4 and 8 have been amended to change the dependency of the claims. Claims 3, 7, 10, 12, and 22-25 have been canceled without prejudice. The subject matter of claims 3 and 7 has been incorporated into claim 1.

Similarly, the subject matter of claim 12 has been incorporated into claim 11. Claims 2, 5, and 20-21 were canceled in previous Amendments. Applicants submit that the amendments are proper despite the finality of the Office Action because they place the claims into condition for allowance and/or in a better form for appeal. No question of new matter arises and entry of the above-requested amendments is respectfully requested.

Claims 1, 4, 6, 8-9, 11, and 13-19 are before the Examiner for consideration.

Rejection under 35 U.S.C. §103(a)

Claims 1, 3-4, 6-19, and 22-25 have been rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,811,480 to Kirchmeyer, *et al.* (“Kirchmeyer”) in view of U.S. Patent No. 4,762,750 to Grgis, *et al.* (“Grgis”). The Examiner asserts that Kirchmeyer teaches a sizing composition for glass fibers that includes 2-20 wt% of a film former (*i.e.*, polyurethane), 0.1-10 wt% of an organosilane coupling agent, 0.1-20 wt% of conventional size constituents, and water in an amount necessary to make up 100 wt%. It is asserted that the polyurethane film former can be a polyether based polyurethane and may be in the form of a dispersion, emulsion, or solution. The Examiner also asserts that Kirchmeyer teaches that the organosilane coupling agent may be one contemplated by Applicants. Additionally, the Examiner asserts that the size composition may contain additional components such as emulsifiers, additional film forming resins, additional coupling agents, lubricants, and auxiliary substances. The Examiner admits that Kirchmeyer does not teach polyamide as the additional film former or the specific non-ionic lubricant and partially amidated polyalkylene imine.

In this regard, Grgis is cited for assertedly teaching a conventional aqueous sizing composition for glass fibers that includes a film forming polymer such as a polyamide, organosilane coupling agents, cationic lubricants such as an alkyl imidazoline produced as a reaction product of stearic acid and tetraethylene, pentamine stearic acid, non-ionic lubricants such as polyoxyethylene sorbitan monolaurate, and polyurethane. The Examiner concludes that it would have been obvious to one of skill in the art to modify the composition of

Kirchmeyer to include an additional film former such as the polyamide taught by Girgis to obtain a sizing composition having a fiber protectorant.

Additionally, the Examiner asserts that aqueous sizing compositions for glass fibers and conventional size components are known in the art. It is the Examiner's position that the specific non-ionic and cationic lubricant utilized in the sizing composition is nothing more than a selection of a specific lubricant from among many art recognized lubricants. As a result, the Examiner has not construed the requirements of claims 4, 8, and 25 to be a matter of invention.

Initially, Applicants submit that claims 3, 7, 10, 12, and 22-25 have been canceled without prejudice, thereby rendering the rejection of these claims moot.

In response to the rejection of the remaining claims, Applicants respectfully direct the Examiner's attention to the amendments made to claims 1, 11, and 18 and submit that claims 1, 11, and 18 define an aqueous sizing composition, a method of making an aqueous sizing composition, and a method of forming a sized glass fiber that are not taught or suggested within Kirchmeyer and Girgis. In particular, Applicants submit that neither Kirchmeyer nor Girgis teach or suggest a sizing composition that includes a solvent-free water dispersible aliphatic polyether based polyurethane solution as claimed in claims 1, 11, and 18.

Kirchmeyer teaches the use of polyurethane film formers in a sizing composition. (*See, e.g.*, column 1, lines 63-67 and column 2, lines 51-56). The polyurethane film formers utilized in Kirchmeyer are the reaction products of difunctional polyisocyanates with difunctional polyols and difunctional polyamines which are dispersed, emulsified, or dissolved in water. (*See, e.g.*, column 3, lines 50-54 of Kirchmeyer). Girgis does not teach or suggest a water-dispersible aliphatic polyether based polyurethane solution or that the polyurethane solution is solvent-free as is required by amended claims 1, 11, and 18. Indeed, Girgis is silent with respect to any teaching or suggestion of any kind of polyurethane solution for any purpose, and thus cannot make up for the deficiencies of Kirchmeyer. It is respectfully submitted, therefore, that the combination of Kirchmeyer and Girgis would not result in the presently claimed inventions. Accordingly, Applicants submit that claims 1, 11, and 18, and all claims dependent therefrom, are non-obvious and patentable. Further, Applicants submit that the combination of Kirchmeyer and Girgis would not result in the inventions claimed in claims 1, 11, and 18.

In addition, Applicants submit that there is no teaching or suggestion within Kirchmeyer or Girgis of the utilization of a polyoxyalkylated polyalkylene glycol ester (non-

ionic lubricant) or a partially amidated polyalkylene imine (cationic lubricant) in a sizing composition that is compatible with a phenolic pultrusion process as claimed in independent claims 1 and 11 and in dependent claim 19. In the outstanding Office Action, the Examiner admits that Kirchmeyer does not teach the specific film former or the partially amidated polyalkylene imine. (*See*, page 3, lines 4-5 of the Office Action dated February 11, 2008). Girgis teaches the use of a lubricant as a fiber protectorant in a size composition. (*See, e.g.*, column 5, lines 22-24). However, there is no teaching or suggestion within the four corners of Girgis of the specific non-ionic and cationic film formers utilized in claims 1, 11, and 19. The Examiner asserts that the choice of the specific lubricants is nothing more than “a preferential selection of one non-ionic lubricant and one cationic lubricant from among many being used for its art recognized purpose.” (*See*, page 3, line 18 to page 4, line 1 of the Office Action dated February 11, 2008). Applicants respectfully disagree. Girgis provides no guidance for one of skill in the art to choose the claimed lubricants. Indeed, Girgis teaches that “any glass fiber lubricant including wet lubricants and non-ionic lubricants or dry lubricant such as cationic lubricants” may be used. (*See*, column 5, lines 22-25). Applicants respectfully submit that the claimed lubricants cannot be simply selected from an extensive and virtual endless laundry list of art recognized lubricants. There must be some suggestion or motivation provided within the reference for one of skill in the art to select the particular components. In the presently claimed inventions, the non-ionic lubricant and cationic lubricant are selected so that, together with the remainder of the claimed components, they form a sizing composition compatible with a phenolic pultrusion process. Neither Girgis nor Kirchmeyer teach or suggest the combination of features and components claimed in claims 1, 11, and 19. Accordingly, Applicants submit that claims 1, 11, and 19 are patentable for this additional reason.

Further, Applicants submit that there is no motivation for one of skill in the art to arrive at the inventions claimed in independent claims 1, 11, and 18 based on the disclosures of Kirchmeyer and Girgis. To establish a *prima facie* case of obviousness, there must be some motivation, either within the reference or in the knowledge of those of skill in the art, to modify the reference or combine the references’ teachings, there must be a reasonable expectation of success, and the prior art references must meet all of the claim limitations. (*See, e.g.*, *Manual of Patent Examining Procedure*, Patent Publishing, LLC, Eighth Ed., Rev. 3, August 2005, §2142). It is respectfully submitted that one of ordinary skill in the art would not be motivated to utilize a solvent-free water dispersible aliphatic polyether based

polyurethane solution based on the teachings of Kirchmeyer and Girgis. As discussed in detail above, Kirchmeyer and Girgis simply do not teach or suggest the use of a solvent-free water dispersible aliphatic polyether based polyurethane solution. In addition, there is no teaching or suggestion within either Kirchmeyer or Girgis of the utilization of a polyoxyalkylated polyalkylene glycol ester or a partially amidated polyalkylene imine in a sizing composition that is compatible with a phenolic pultrusion process. There is absolutely no motivation provided within the cited references for one of skill in the art to select the particular sizing components claimed in claims 1, 11, and 18. Without some teaching or suggestion, there can be no motivation, and without motivation, there can be no *prima facie* case of obviousness.

In view of the above, Applicants respectfully submit that claims 1, 11, and 18 are patentably distinguishable over Kirchmeyer and Girgis, either alone or in combination. Because claims 4, 6, 8-9, 11, 13-17, and 19 are dependent upon independent claims 1, 11, or 18, which, as discussed above, are not taught or suggested within Kirchmeyer and Girgis, claims 4, 6, 8-9, 11, 13-17, and 19 are also submitted to be non-obvious and patentable.

Applicant therefore respectfully submits that claims 1, 4, 6, 8-9, 11, and 13-19 are not obvious over Kirchmeyer and Girgis and respectfully request reconsideration and withdrawal of this rejection.

Conclusion

In light of the above, Applicants believe that this application is now in condition for allowance and therefore request favorable consideration.

If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

If necessary, the Commissioner is hereby authorized to charge payment or credit any overpayment to Deposit Account No. 50-0568 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

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